

REMARKS/ARGUMENTS

Reconsideration of the application as amended is respectfully requested.

Status of Claims

Claims 1, 2 and 4-24 are pending in the application, with claims 1 and 23 being the only independent claims. Claims 1, 23 and 24 have been amended.

Overview of the Office Action

Claims 1, 2, 4-12, 15, 19, 20, 23 and 24 stand rejected under 35 U.S.C. §102(a) as being anticipated by WO 01/59895 (*Paschotta*).

Claims 13, 14, 16-18, 21 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Paschotta*.

Summary of Subject Matter Disclosed in the Specification

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

The specification discloses a laser device for generating laser pulses with an optically pumped semiconductor laser 1. The laser device includes a semiconductor laser 1 having an active layer 4; a first pump radiation source 3a, 3b which is monolithically integrated into the semiconductor laser 1; an external resonator; and at least one mode-locker 10. The active layer 4 is optically pumped by the monolithically integrated internal pump radiation source 3a, 3b. *See, e.g., Fig. 2; and paragraphs [0019] and [0055] to [0058] of the specification.*

Allowability of the Claims

Independent Claim 1

Claim 1 has been amended to recite

“a semiconductor laser having an active layer;

a first pump radiation source which is monolithically integrated into the semiconductor laser; ...

wherein the active layer is optically pumped by the monolithically integrated first pump radiation source” (emphasis added).

Support for the amendments can be found in Fig. 2; and paragraphs [0056] and [0060] of the specification.

During a telephone conference with the Examiner on November 8, 2006, the Examiner acknowledged that although *Paschotta* has quantum wells 3/active layer, *Paschotta* does not have a monolithically integrated first pump radiation source which is different from the quantum wells 3/active layer.

The Examiner also tentatively agreed that claim 1 of the present application would not be anticipated by *Paschotta* and would be allowable (subject to another search of the prior art) if amended to positively recite an active layer as a feature different from a monolithically integrated first pump radiation source.

As recited above, applicants have amended claim 1 to positively recite an active layer as one feature and a first pump radiation source as another feature, and to recite the relationship between the active layer and the first pump radiation source as both being a part of the semiconductor laser.

In view of the foregoing, withdrawal of the §102(a) rejection of claim 1 is respectfully requested.

Moreover, in view of the fundamental differences between claim 1 and the prior art, as discussed above, claim 1 is clearly allowable under 35 USC 103(a) as well.

Dependent Claims 2 and 4-22

Each of claims 2 and 4-22 depends, directly or indirectly, from independent claim 1, and as such benefits from its allowability.

In addition, these claims include additional limitations which serve to even more clearly distinguish the claimed invention over the prior art of record.

Independent Claim 23 and Dependent Claim 24

Independent claim 23 has been amended to recite “wherein the resonator has a phase compensation element, said phase compensation element compensating for group velocity dispersion” Support for this amendment can be found, for example, in paragraph [0030] of the specification.

As explained in the specification, the expression “group velocity” refers to the speed at which the centroid of a wave packet moves in a medium. The dependence of the group velocity on frequency is referred to as the group velocity dispersion. See paragraph [0066] of the specification.

Due to the group velocity dispersion, different spectral components will have different propagation times in the resonator. To compensate for this effect, the present invention proposes using a phase compensation element that has different propagation times for different spectral components/wavelengths. In this way, the pulse widths are reduced and sub-picosecond pulses

and femtosecond pulses can be generated. See paragraph [0030] of the specification. The different propagation times for different spectral components/wavelengths are a result of the refractive index depending on frequency, e.g., in a prism system or a grating. Due to the refractive index depending on frequency, the optical paths for different spectral components/wavelengths are different in the phase compensation element.

Applicants respectfully submit that amended claim 23 is not anticipated by *Paschotta* because *Paschotta* does not disclose, either expressly or inherently, each and every element as set forth in amended claim 23. In particular, *Paschotta* does not teach or suggest a phase compensation element which compensates for group velocity dispersion, as recited in amended claim 23.

On page 3, lines 10-20, *Paschotta* teaches the advantages of passive mode-locking in comparison to active mode-locking. On page 3, lines 10-20, *Paschotta* teaches that passive mode-locking can be achieved by a saturable absorber mechanism. *Paschotta* later teaches using a semiconductor saturable absorber mirror 5 for passive mode-locking (*see, e.g., the Abstract; and page 5, lines 10-25 of Paschotta*). Thus, this portion of *Paschotta* explicitly teaches using the saturable absorber mirror to shape and stabilize ultra short pulses. *Paschotta* does not teach or suggest using the saturable absorber mirror 5 to compensate for group velocity dispersion.

Moreover, the saturable absorber mirror 5 of *Paschotta* is not suitable for group velocity dispersion because it does not have different propagation times for different spectral components. The intensity-dependent absorption of the saturable absorber mirror 5 of *Paschotta* simply does not, and cannot, have the effect of phase compensation for compensating the group velocity dispersion.

In sharp contrast, amended claim 23 of the present application now specifically recites a phase compensation element which compensates for group velocity dispersion.

In view of these differences, applicants respectfully submit that amended claim 23, and claim 24, which depends from claim 23, are not anticipated nor rendered obvious by *Paschotta*.

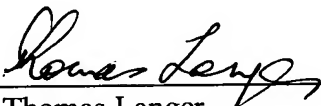
Conclusion

Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect and early passing of this application to issue are respectfully solicited.

Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

Respectfully submitted,

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